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THE PRACTITIONERS' MONTHLY.

DETROIT MEDICAL JOURNAL

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Case 1.—A boy, 11 years of age, had suffered for a day from headache and fever, with pain in swallowing. Both tonsils were red and swollen, especially the right, which was studded with patches of exudation from the crypts.

Case 2.—A girl, age 15 years, had had a chill 24 hours previously, her throat felt sore, and it pained her to swallow. The glands of the neck were swollen and there was fever. Both tonsils were considerably enlarged. The crypts were exuding their characteristic discharge.

Case 3.—A young woman, 19 years of age, was attacked by vertigo and lost consciousness. Twelve hours later both tonsils were found greatly swollen, almost meeting in the middle line. The cervical glands were moderately enlarged. The surface of the tonsils was dotted by exudation.

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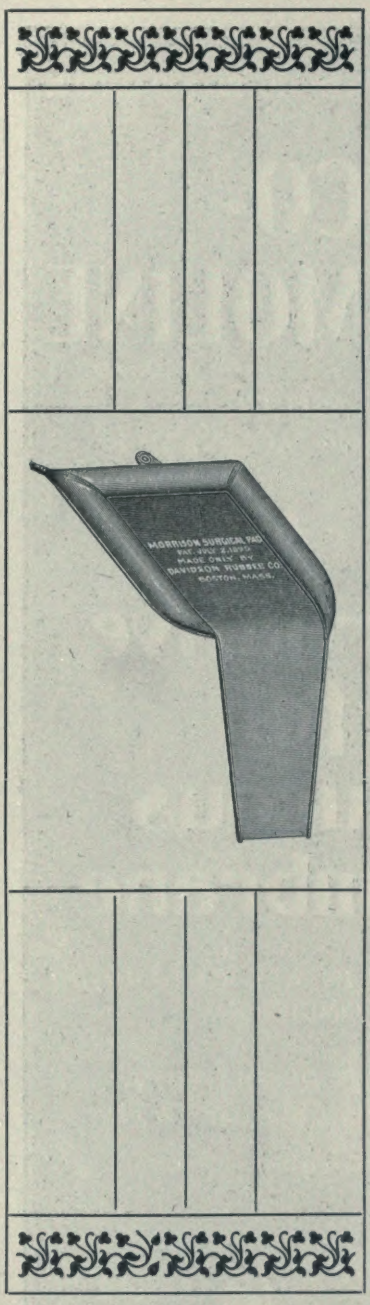

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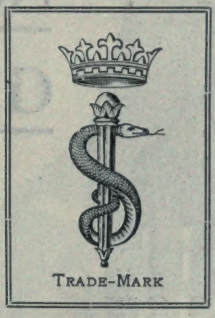

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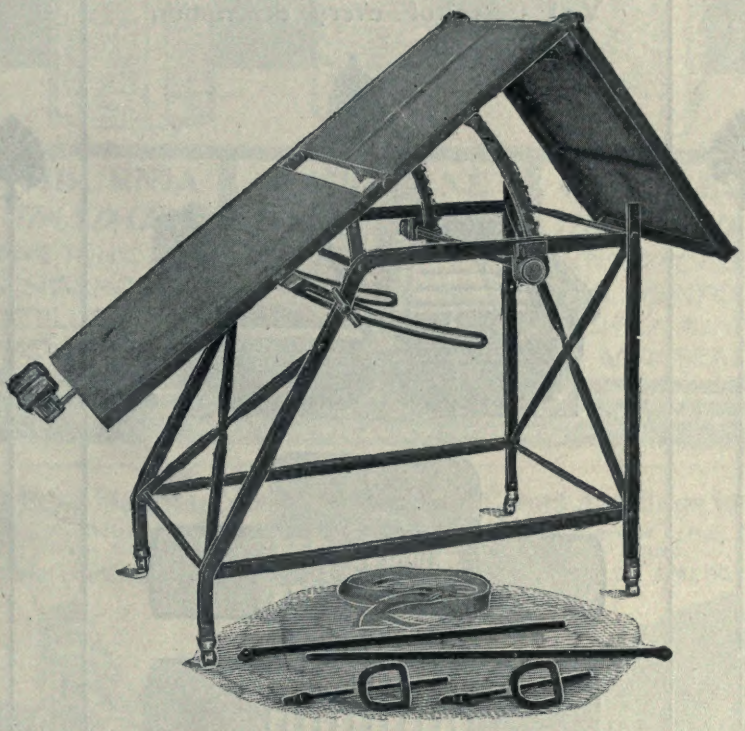

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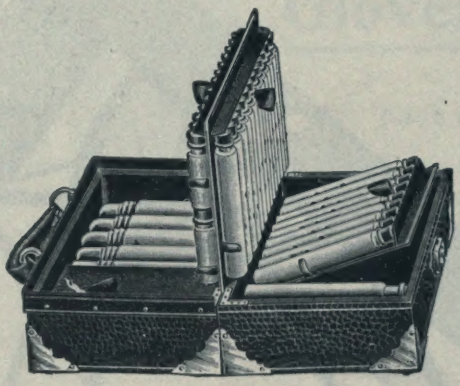

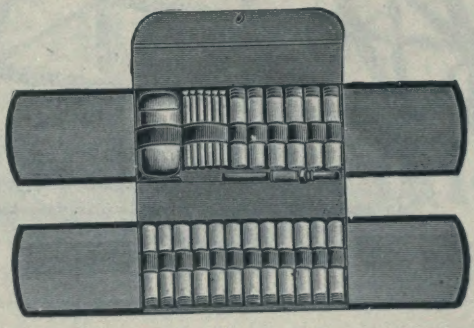

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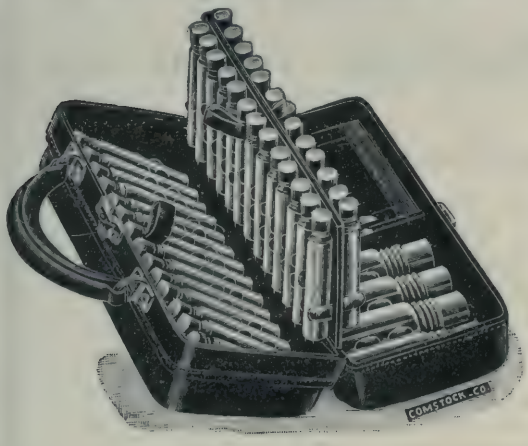

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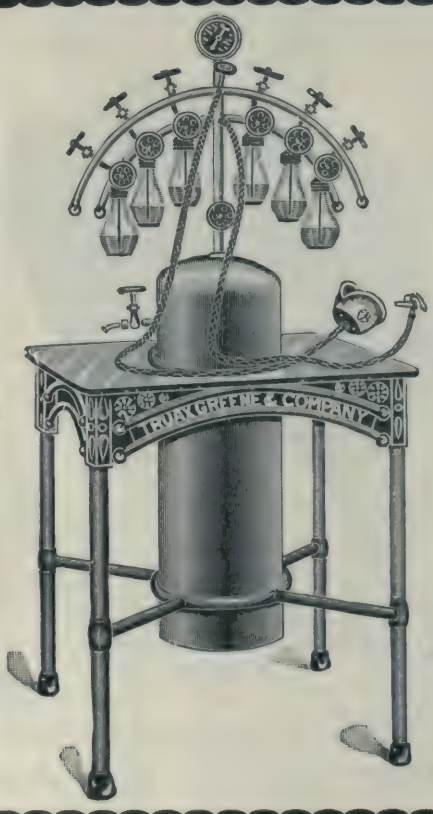

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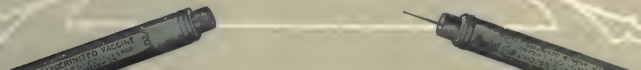

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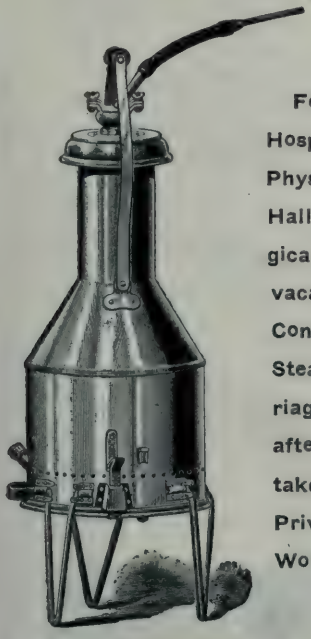

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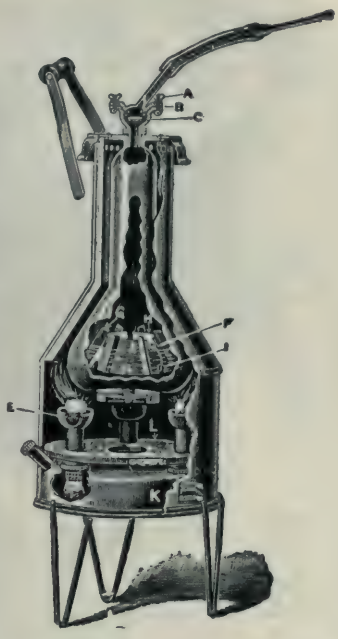

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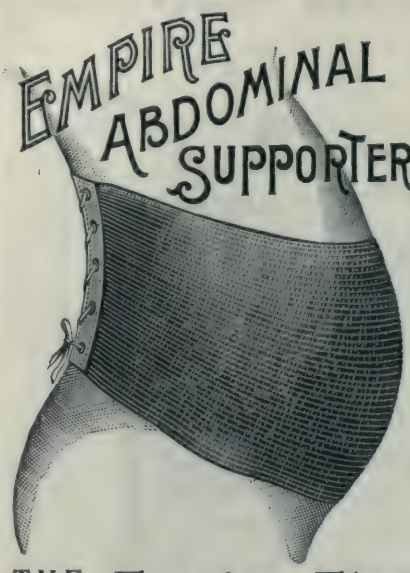

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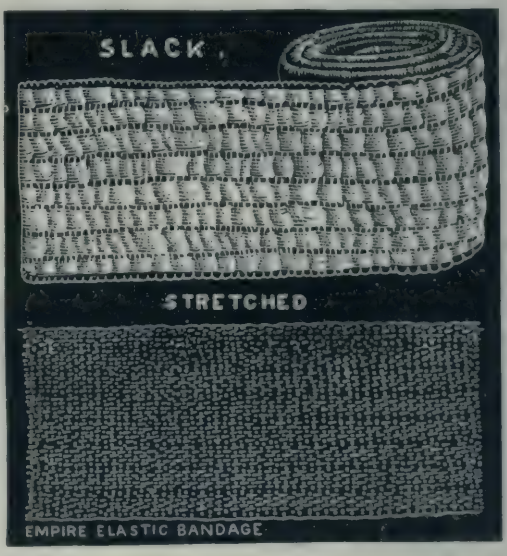

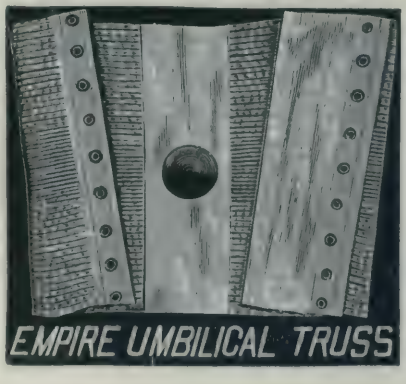

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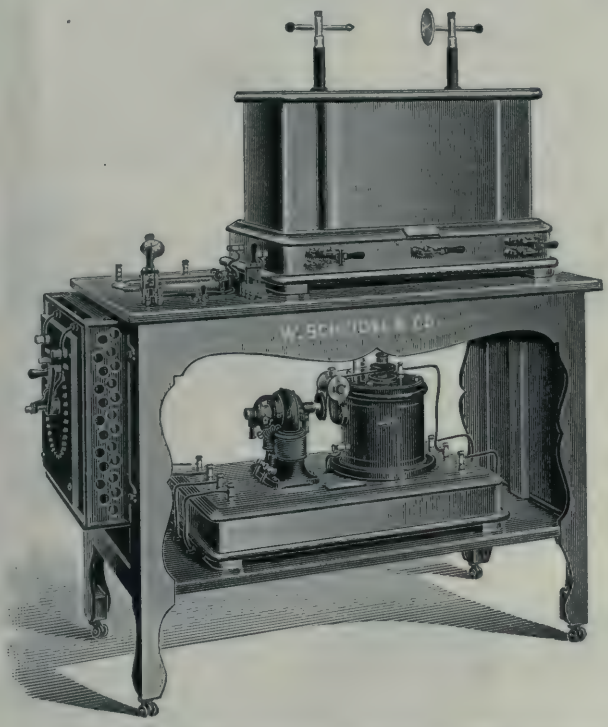

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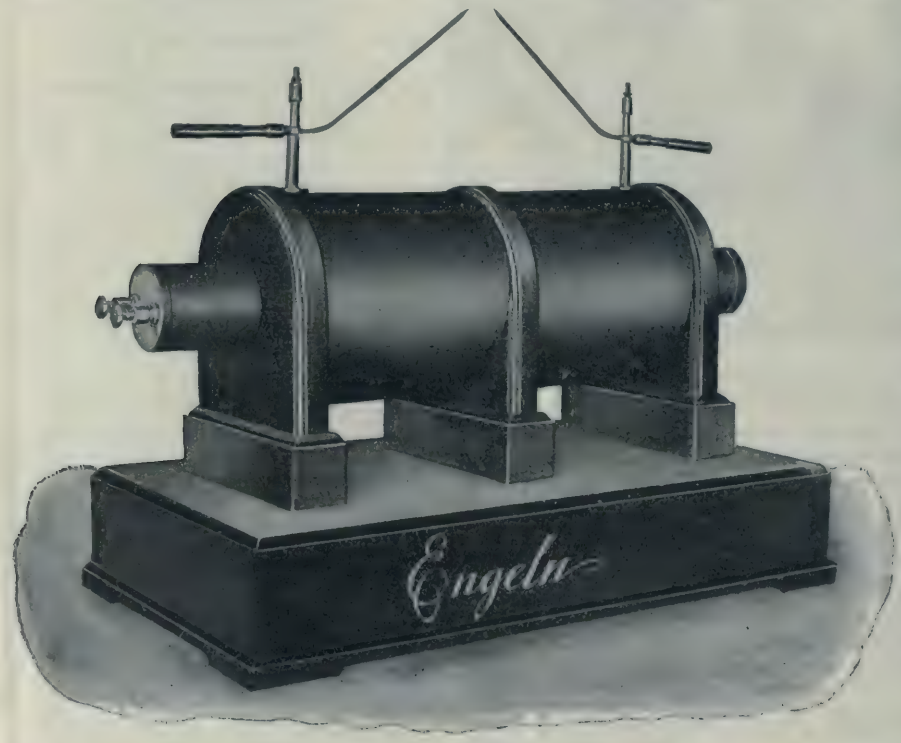

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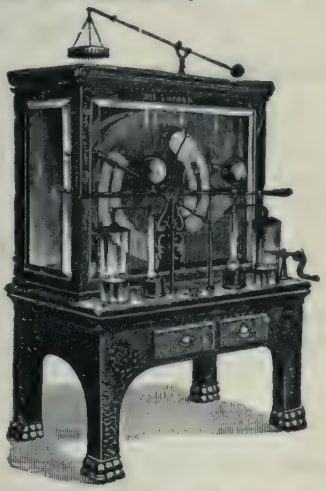

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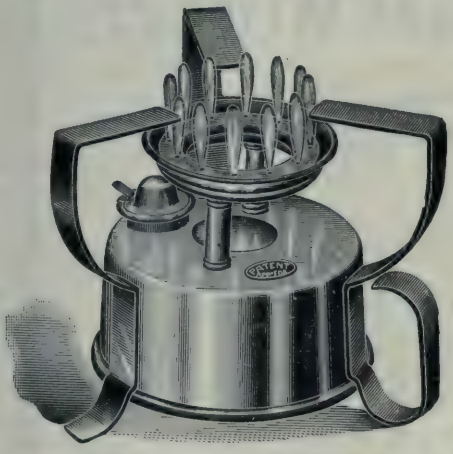

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THE DETROIT MEDICAL JOURNAL.

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STARVATION AS A THERAPEUTIC AGENT.*

By CHARLES DOUGLAS, M. D.

Starvation is popularly understood to be a condition of suffering due to the absence or want of food in healthy or sick individuals. As an incident in the punishment of the healthy or as a part of the regimen in the treatment of sick individuals its history dates far back beyond the period when the word was first used by Earl Melville, in 1775, while speaking on American affairs in the English parliament.

The application of the idea in this paper is not strictly in accordance with the true sense of the word as popularly used, but in the minds of many patients it has that significance, and in their physical sensations frequently this impression is endorsed. In many other patients for whom this regimen is necessary, starvation does not give this mental impression nor do the physical sensations give those feelings of suffering which the absence of food often gives to the ordinary healthy individual. True it is that in some classes of patients this sense of starvation is acute to the patient, but to the skilled physician it appeals rather as an abnormal sensation, due to irritation of the mucous membrane of the gastro-intestinal tract in a diseased or over-worked condition, rather than the true healthy desire for food.

All physicians are familiar with the necessity for restricting the food in many forms of disease, as they are also familiar with the necessity of feeding liberally many other forms of disease. The object of this short essay is to draw attention to this therapeutic agent, starvation, in a practical way, and thus look at its use and the results obtained when this measure is carried to a somewhat extreme degree, or more properly speaking, to a degree demanded by the clinical condition and the physiological necessities for perfect repair of the parts overpowered by disease. In order to do this clearly it seems best to cite cases of different kinds in which this agency may be applied with benefit.

Selection of Patients.

The selection of patients requiring starvation for a time opens up a very wide field indeed, inasmuch as we find them of all ages and the sicknesses of a very wide range in character. To the casual observer there is very little similarity in these sicknesses or reason why they should be amenable to the same treatment. When we consider the anorexia usually produced in all acute febrile diseases, and also the direct range of its intensity with the height of the fever, we see at once how nature follows a common law of lessened necessity for food in all acute febrile disturbances. It is well for our patients always when we recognize nature's demands as thus expressed in those with ordinary healthy digestive organs; and also, more especially, when we remember her law in those with unhealthy or overworked digestive organs when suffering from acute febrile dis-

*Read before the Wayne County Medical Society, Feb. 19, 1903.

turbances. Especially in this latter class it is necessary to apply this starvation regimen, as these patients very commonly suffer from an increased craving for food rather than the anorexia which should accompany the condition. In other words, the physician should always apply this regimen when he knows that the clinical condition of the patient prevents perfect digestion of the food and consequently if allowed it will add another source of high temperature; and consequently a mixed infection or toxæmia will be the result, with the difficulties of diagnosis and treatment materially increased.

As it seems to the writer that this condition will be best understood and most easily seen in individual cases, we will look at a few of them as seen in daily routine work.

Cases.

Miss M. M., returned from a boarding school in a southern city after the spring term closed. She was eighteen years old and her family noticed that she was complaining unusually of the heat, although the season of the year, the cool home and the broad shady lawn did not warrant this continual lament. I was asked to call on her, as they thought she must be sick. She showed marked typhoid symptoms, with a temperature of 104°, and was treated accordingly. A very limited liquid diet was allowed, but the stools showed indigestion and continued in the same loose, foul, watery condition in which I first found them. The diet was very much reduced with corresponding improvement in the digestion, but the stools, although less frequent, remained of the same foul, watery character. Changes in the diet gave patient improvement in digestion and stools, but never gave satisfactory results. Medication, though varied, seemed to have little effect. This condition continued with varying remissions for several weeks, until the continued high temperature, imperfect nutrition and loose, foul, watery stools, made me apprehensive of the result. A consultation with two other physicians gave us little advantage other than their kind advice and encouragement, as the patient was not benefitted by the changes we made in the diet or the medicinal treatment. As the case was now nearly hopeless at the end of six weeks and the temperature running constantly over 104°, with food passing in the stools always, I decided to cut off all food and give brandy only. This regimen I continued for nine days and had the satisfaction of seeing the temperature fall steadily from over 105° to less than 103°. The digestive tract became quiet, demanding assistance every three or four days in order to have any stool. This patient could not take milk at any time, even in the smallest quantities, without its acting as a laxative, and she recovered at the end of eleven weeks without any. No milk could be digested after the first two weeks, and every effort to give even a tablespoonful resulted in loose, foul stools. Improvement in this patient dated from the era of nine days' absolute starvation, during which the temperature fell from 105° to less than 103°.

Another case of typhoid was:

J. C., aged four years, an only child, sick two weeks. He also had the thin, watery, foul stools for ten days and slimy, bloody stools for three days before I saw him. The temperature ranged from 105° to 103½°. Reduction of the diet in this case gave improvement in digestion, but absolute starvation was requisite before the watery stools could be entirely removed. This child was given only a diluted whiskey for two weeks, all food being removed for that time. The improvement in all the symptoms was marked and continuous during the food starvation, and careful addition of liquid food was well borne afterwards. This child

continued to improve steadily and was convalescent in six weeks.

In both of these cases the products of imperfect digestion acted at least in a two-fold manner. Those that were absorbed into the blood-current through their toxic effects increased the fever and delirium, and those that were not absorbed were so strongly irritating to the mucous membrane lining of the stomach and bowels that the patient's strength was rapidly depleted through the loss of serum in the liquid discharges. The decided and continuous reduction of the temperature after all food was stopped, in the two cases above, went to show that the original fever infection was supplemented by another fever infection, or toxin, due to the imperfectly digested food.

Nephritis.

R. D., an infant of nine months, was fed during the first six months with condensed milk. Owing to the unequal way in which the food was given the infant had numerous attacks of indigestion, with fever, vomiting and disturbed bowels. The mother was always in the habit of stopping the food during these attacks, and when all disturbance had passed away she resumed feeding, on the same principle as before, paying little or no attention to adjusting the food to the amount of the digestive secretions. At six months the condensed milk became so irritating that the mother changed to a proprietary food, containing no milk. The improvement was most marked, as the child grew fat on the starch, sugar and albumin of the new food. So marked was this that the mother became alarmed at times and reduced the food, and even stopped it occasionally for part of a day. Influenza was prevalent among infants when this child was nine months old, and he contracted it. When I saw him the larger tubes were involved and he was coughing very much like other infants of his age. The lung tissue was not affected. The temperature was 104° and the child was very nervous and wakeful, making me apprehensive of convulsions. A bromide and chloral mixture was given, after a free laxative and cold baths, and all food was prohibited. Cold drinks were encouraged. A sample of the urine showed extreme albuminuria. The mother complained loudly of the foul odor emanating from the urine, but this passed away in a few days. Cold bathing as demanded by the thermometer was continued, together with saline laxatives; but no food of any kind, liquid or solid, was allowed until the fever had entirely disappeared and the urine showed no trace of albumin. This regimen demanded twelve days of absolute starvation and several days of very little food after that, in order to guarantee safe convalescence. For several days during this sickness this child could not open its eyes on account of the great œdema of the face and eyelids. So fat and full was this child at the beginning of this sickness that he did not look emaciated at the end of it, and no one would suppose that he had not been well fed for these two weeks of his illness.

I am convinced that any method of feeding in this case would have been fatal to the infant. So overcharged had the kidneys been by the surplusage of waste and poisonous products of food for weeks and months previous to this sickness, that the kidneys were necessarily congested always in order to perform the enormous duties imposed upon them. The addition made in waste urinary products by the first few febrile days of the influenza was more than these organs could eliminate and nephritis with albuminuria was the result. To the writer's mind, absolute starvation gave the only chance for recovery.

I was called to see a little girl twenty months old, in convulsions, whom I had

never seen before. Her father worded the telephone message as follows: "Tell the doctor there is no chance of recovery, as the child is dying, but we would like to have him see her; it would be a satisfaction to us." I found another well-nourished child, but one who had been suffering from nausea and vomiting, with high temperature, for eight days. Her previous starch and milk diet had been overfed, thus causing the nausea and vomiting. A nitrogenous diet of beef-tea and liquid peptonoids had been used for a week before the convulsions supervened. The high temperature, convulsions and general œdema demanded a rapid emptying out of the body of all toxic and waste products, and particularly a complete and absolute starvation for the time being, to prevent any fresh load being placed on the already overloaded and inflamed kidneys. Albumin was present here also in large quantities. Saline laxatives, with starvation, secured a recovery in two weeks. She showed little physical effect from this starvation regimen. In this case I felt that the liquid peptonoids and beef-tea were the cause of the nephritis and convulsions, inasmuch as this type of food is particularly difficult for the kidneys to eliminate and should always be avoided during a febrile condition in overfed children, as their kidneys are always severely tried by the superabundant waste products given them to eliminate.

Gastro-Enteritis.

E. B., an infant of four months, was suddenly attacked with gastro-enteric symptoms, showing frequent stools fermented in character and containing much mucus. She had been fed by a wet-nurse who had been taken sick. The changed character of the milk from the wet-nurse was the direct cause of the infant's sickness. All nursing was prohibited, and no other food given for five days, when, the nurse being convalescent and the milk well drawn out by a breast-pump, the infant was again put to the breast and no more digestive disturbances followed this better quality of milk.

Pneumonia.

Nellie F., a little girl of seven years, was stricken with a very severe diarrhœa and vomiting. She had a temperature of 104½°, respirations over fifty, and an annoying cough. Auscultation showed mixed dry and moist râles. Here was a case of broncho-pneumonia where the infection had checked the digestive processes. Cool bathing, to control fever, and starvation until recovery was established in ten days, with complete resumption of the digestive secretions, made the sum total of the treatment. She made a rapid recovery.

Scarlet Fever.

John S., aged ten years, was stricken with foul diarrhœa and vomiting, with high fever. On the second day his face showed a scarlatinal rash. The disturbance of the alimentary canal continued, with strongly-marked toxæmic symptoms, showing stupor and great drowsiness. As nature indicated by the foul discharges a marked decomposition of food rather than a digestion thereof, I followed her instructions and prohibited all food until the desquamative period was well established, a period of eight days. There was little other treatment demanded or needed, as the temperature soon fell within safe limits, all diarrhœa stopped and he made a good recovery.

F. C., an infant of five months and hand-fed, was taken with very severe vomiting and loose, watery stools of a very foul character. This infant was hand-fed from birth and had grown and thrived so well that its grandmother, who was rearing it, thought it safe to increase the food in order to make a big, fat baby of it. The trial of more food than there was digestive fluid to convert proved disastrous and this sickness followed. Com-

plete absence of all food was ordered at once. So great was the sickness that friends thought the infant dying on two different nights. In the daytime it certainly looked as if death might follow the sickness. After starving from all food for eight days, and all diarrhœa having ceased, it was considered safe to again feed in small quantities. He made a rapid recovery and is now strong and fat, growing rapidly.

Conclusions.

These cases might be multiplied indefinitely in any busy physician's round of patients. The few cases selected from patients of wide divergence in years, and sicknesses not allied to each other, go to show the large field in which starvation may be used as a therapeutic agent with good success.

959 Jefferson Avenue.

RABIES.* (Continued.

The Diagnosis of Rabies by Animal Innoculations.

By JOSEPH SILL, M. D.

The cause of rabies is not known. So closely, however, does this disease resemble in its characteristics and behavior, those diseases whose known cause is microbic, that I think we are justified in assuming that it too is dependent on some microscopic form of life as its prime factor.

The following are some of the facts leading us to this conclusion:

The disease can be transmitted from animal to animal indefinitely.

A minute quantity of virus entering the body is sufficient to cause the disease, but the symptoms develop only after the lapse of a considerable period of time, and sufficient virus can be obtained from an animal so inoculated, to produce the disease in many others, showing that the poison must multiply in the body. It is true that this incubation period is longer and more variable than in any other infectious disease; varying from eight days to eight months in the dog, and from fourteen days to eighteen months in man. This difference from the other infectious diseases is one of degree rather than kind, and can be explained by the supposition that we are dealing with an organism of very slow growth.

The ordinary germicides, such as heat, bichloride of mercury, permanganate of potash, and carbolic acid destroy the virus. Like the bacteria, the virus is attenuated and finally destroyed by dessication.

Rabies has never been known to originate *de novo* in man, and although it is of course impossible to always get a history of previous inoculation in animals, we are justified in assuming that it is never of spontaneous origin.

Such reasoning as this is all we have to rely on in determining the cause of rabies. Its discovery has from time to time been announced, but always on insufficient evidence. Pasteur thought for a time that he had isolated the bacillus of rabies from the saliva of a child that had died of this disease. He finally determined that the disease produced by this bacillus was a septicemia.

"A. Bruschettini, of Turin, claims to have discovered the cause of rabies in a small, short, thick bacillus with a clear zone in the center. A bacillus of this description may be found in the medulla of rabid dogs, and this grown in emulsion of the brain, removed, and regrown to the fifth generation is claimed to have produced rabies in sub-dural inoculations of rabbits, and the brain matter of these to have in like manner produced this disease in other rabbits.

"G. Nemmo, of Rome, claims to have discovered the cause of rabies in a series of blastomycetes from the brain of experimentally rabid rabbits, also from the brain of a child that had rabies from a dog bite. This organism intra-peritoneally injected into guinea pigs in eleven to twenty days causes paresis of the hind limbs, extending rapidly, and death in about twenty-four hours, often preceded by clonic convulsions. The virus from the abdominal cavity produces some symptoms in other guinea pige. Dogs injected subdurally or subcutaneously become thin in seven to eight days, snappy, foam at the mouth, and are paralyzed in the limbs. This disease could be transmitted from dog to dog, but not to guinea pigs."—(Gorman-Sims Woodhead.)

"Both of these investigations cannot be right, and neither has received general scientific confirmatory demonstration and acceptance. The bacillus described by Bruschettini is like that of rabbit septicemia, except that it is coarser, which the bacillus of rabbit septicemia also becomes when grown in certain media. Many of these bacilli with clear centers and bipolar staining are decomposition organisms, the clear center being a gas vacuole, and sometimes a surrounding clear space of like nature deceptively resembles a capsule. It has been suggested that rabies is a modified septicemia with a predilection for the nervous system. The writer has never been able, except in the case of one rabbit to get a prolonged incubative stage like that of rabies in experiments with septicemia virus; moreover, in this case all the symptoms so charasteristic of rabies were not present."—(Keirle.)

There are several reasons why we might fail to find a microbe of rabies. The first is, of course, that there is none. This in the face of the known facts concerning the disease seems to me an untenable supposition. Another reason is that none of the methods of staining at present in use is efficient to demonstrate this particular organism. Another is that in our search for this organism we are confronted with the same difficulty as when we look for the tubercle bacillus in urine; that is, tne presence of the organism in exceedingly small numbers. The long incubation period—the apparently slow multiplication of the virus renders this a possibility. Again, the microbe—and I use this term advisedly, meaning merely some microscopic form of life—may, like the tetanus bacillus, be present only at the point of inoculation. Finally, it may be so small that our present optical instruments are not adequate to demonstrate it. Still, I see no more reason to doubt that rabies is a microbic disease than that small-pox is one.

The pathological changes seen in rabies are not characteristic, and seem wholly inadequate to account for the symptoms manifested by those afflicted with this disease.

The most interesting and important changes occur in the central nervous system. There is more or less severe congestion of the meninges; there may be small subdural and pial hemorrhages. Especially in the medulla and upper cord we find hyaline degeneration of the vessel walls, interstitial hemorrhages and collections of leucocytes about the vessels and central spinal canal. These are the so-called "rabic tubercles," considered by Babes to be characteristic of the disease. These changes are more marked in the anterior horns. There may be swelling of the medullary sheaths and some degenerative changes in the nerve fibers. Ravenal and McCarthy claim to have found diagnostic changes in the ganglia of the central and sympathetic nervous systems, especially in the ganglia of the celiac plexus. These consist of an increase of the endothelial cells of the pericellular capsule and a replacing of the

nerve elements by endothelial cells. On the other hand, Spiller has noted similar changes in a case of endothelioma of the Gasserian ganglion and in a case of Landry's paralysis.

In addition to the changes in the nervous system we find hyperplasia, granular degeneration and ecchymoses of the lymph glands. Those about the head and neck are swollen. The salivary glands, especially the submaxillary, show a number of small granules, closely packed, sometimes in rows and sometimes in a radiating arrangement, and following in general the course of the vessels. These have been thought to be the vehicle of the transmission of the poison, but are probably the result of degenerative changes. The mucous membrane of the mouth, throat, esophagus and stomach may be swollen and intensely congested. This is probably due in part in animals to the unusual and irritating things such as hair, straw and bits of wood swallowed during the disease. There are congestion and inflammation of the kidneys, with albuminuria, and often gylcosuria. Indeed Rabieau and Nicolas found glycosuria so often in animals experimentally inoculated that they consider its presence of diagnostic value. They say that Fehling's solution is not available for determining the presence of sugar on account of other reducing substances in the urine, consequently they use phenylhydrazin. They bespeak a careful following of their technique, which is described in the original article, but is not given in the review to which I have access.

The inoculation, for diagnostic purposes, of animals with material taken from other animals suspected of having died of rabies, is by no means a new procedure, and I want to disclaim any originality in the work I have been doing at the Detroit Clinical Laboratory. I have simply carried out a perfectly understood procedure, and arrived at results that could have been foretold, granting that the material I worked with was what it was supposed to be. The whole question was one of diagnosis, and failure would have demonstrated faulty technique rather than a mistaken theory.

Experimental inoculations have been made in several ways. Various secretions and organs of the body have been used, and these have been introduced into the animal in a number of ways. Most of these deserve only passing notice, for they have proved unsatisfactory in practice, and uncertain in results. Among the materials used for inoculation experiments may be mentioned the saliva, the substance of the salivary glands, the kidney, the adrenal bodies, the milk, the blood, and the central nervous system, especially the medulla.

The methods of inoculating have been even more varied than the materials used. They are: Intra-cutaneous and subcutaneous inoculation; inoculation of the conjunctiva and the mucous membrane of the nose and the genitals; intra-peritoneal injection; inoculation of the anterior chamber of the eye; subdural inoculation; inoculation into one of the peripheral nerves; intra-venous inoculation; intracerebral inoculation; inoculation by lumbar puncture; inoculation through the foramen magnum and through the optic foramen.

As I said, most of these methods have proven unsatisfactory and have been cast aside. Intra-venous inoculation has been followed by some positive results in dogs and rabbits, but according to Saltier confers immunity in horses and ruminants.

Inasmuch as the disease is spread almost entirely by the saliva, inoculation of this secretion by some method would seem to be the most natural way of producing the disease experimentally. Inoculations with saliva have proven unsatisfactory, however, because it contains bacteria in large numbers and variety

which, as a rule, cause the death of the animal before the symptoms of rabies develop.

The methods now in use, although differing considerably in detail, have a common object in view. This is the bringing of some part of the central nervous system—preferably the medulla—of the supposedly rabid animal into direct contact with the central nervous system of the animal to be inoculated. As subdural inoculation is the method in most common use, I will describe in detail the technique I have carried out.

In order to guard against septic meningitis, the whole procedure must be carried out with as near an approach to perfect asepsis as is possible when working with animals. At every step we must guard against infection with the ordinary bacteria.

The medulla of the supposedly rabid animal is first removed. During this process great care is taken that everything with which the medulla comes in contact, from the instruments with which it is removed from the cranial cavity to the flask that finally receives the emulsion, is thoroughly sterilized by moist or dry heat. The skull is first bared, and the skin flaps, the muscles and ears are cut off to get them out of the way, and to prevent their serving as a possible source of infection. The head is now thoroughly cleansed with strong bichloride of mercury, and then dried with a sterile towel to remove the excess of the antiseptic. With sterilized saw and bone forceps the skull cap is removed. From this point we must depend on asepsis rather than antisepsis, for we must not allow the medulla to come in contact with any antiseptic. After a careful washing and disinfection of our hands we remove the brain with sterilized instruments, cutting the cord as low down as possible. The medulla is now placed in a sterilized covered dish.

After another washing and disinfection of our hands, we proceed to the making of the emulsion. This is done on a table rendered as aseptic as possible by scrubbing with a strong bichloride solution. A small piece of the medulla, 1-2 cubic centimeters, is placed in a sterilized mortar and thoroughly broken up; 10-15 c. c. of sterilized water is added and the whole rubbed up until a milky emulsion is formed. This is filtered first through cotton, then through filter paper, and is finally received in a sterilized flask stoppered with a sterilized cotton plug.

This completes the preparation of the material. The next step is the inoculation of the rabbits. This operation must be carried out with as careful attention to asepsis as was the preparation of the emulsion. For the inoculation a point is selected just posterior to a line drawn between the center of the rabbits' eyes, and far enough to one side of the median line to avoid the longitudinal sinus. The operative field is shaved and disinfected, and the rabbit etherized. An incision one centimeter long is made in the scalp, and a shorter cut is made in the periosteum. This is stripped from the skull for a small space, and with a dental engine and burr a hole about 2 mm. in diameter is made through the skull. Through this opening about five drops of the emulsion is injected beneath the dura with a hypodermic syringe. The scalp wound is closed with a single stitch and sealed with collodion, and the operation is complete. On account of the probable loss of some animals from septic meningitis in spite of all precautions, several are inoculated.

By the method just described I have operated on three series of animals numbering in all 25. Of this number I have lost two from causes attributable to the operation. One of the two died from ether narcosis before the operation was completed; the other died from shock within a few moments after the completion of the operation.

The rabbit shows symptoms in about 15 days. It sits "hunched up" perhaps, with its ears dropped back on its head instead of erect. It avoids its companions, and seeks out the way places and the dark corners of its cage. It shows a disinclination to move, and only a hard push will induce it to change its position. When it does move, it uses its hind legs awkwardly, and shows a beginning of paralysis of those extremities. This becomes more and more marked; the abdominal muscles become involved, and the belly, losing their support, rests on the floor. The paralysis soon extends to the forelegs, and the animal lies sprawled out on its belly, or helpless on its side, and dies in a position of opisthotonos. The course of the disease is 1-3 days.

On Friday evening, September 6, an English setter dog was brought to the laboratory. It had that day died, and five days previously had bitten a boy. Dr. Brenton, who had seen the dog before death, made a probable diagnosis of rabies, but thought poisoning a possibility. As soon as preparations could be made, the dog's medulla was removed aseptically. The spinal cord, stomach, liver and kidneys were also removed. The post mortem changes were as follows:

The meninges of the brain and cord showed intense congestion. The mucous membrane of the esophagus and stomach was much swollen, and intensely hyperemic. The stomach was packed with hair, straw, and other foreign substances. It contained no food. The kidneys were markedly congested. Microscopically the cord showed interstitial hemorrhages, and the so-called rabic tubercles. These changes were more marked in the upper than in the lower part of the cord.

Careful examination of the stomach, liver and kidneys by Dr. Stephenson failed to show the presence of any poison. This result was confirmed by the result of the animal inoculations.

On Saturday, September 27, a series of 12 rabbits was inoculated with an emulsion of the dog's medulla. Results were as follows:

One rabbit died from ether narcosis; three died from gastro-intestinal disturbance; one from broncho-pneumonia; one disappeared, and six died, having shown the symptoms and post mortem changes of rabies. The incubation period varied from 14-36 days. Of these rabbits the first three to die (on the first, seventh and eighth day respectively), showed no meningeal congestion. One dying on the ninth day, showed a slight congestion of the meninges.

All of the others showed, post mortem, intense meningeal congestion. Cultures were made from the brain of several, but with negative results, showing that the meningitis was not due to any of the ordinary bacteria. The rabbit that died of broncho-pneumonia showed at the post mortem the same meningeal congestion as the others, justifying the supposition that it would in a day or two have died of rabies if it had not been prematurely killed by the accidental infection. In this series the result was positive in over 50 per cent. of the animals inoculated.

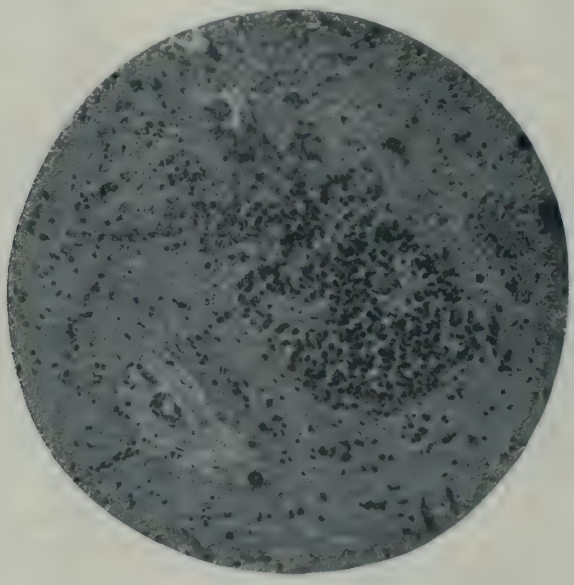
On Saturday, October 11, Mr. A. F. brought a black spaniel to the laboratory, looking for a veterinary surgeon. By the courtesy of Dr. Brenton, I had already seen one case of rabies in a dog, and something about this animal's appearance convinced me that it was suffering from the same disease. I induced Mr. F. to leave the dog with me, and at once had him locked in a box-stall, where he could do no harm, and watched him closely until he was killed on the following Thursday night.

When he was brought to the laboratory he showed no inclination to bite, and no paralysis of the hind legs. There was, however, beginning paralysis of the elevator muscles of the jaw. The dog car-

ried his mouth open, and could close it only with difficulty. The eyes were red, and there was a peculiar distressed and distrustful expression of the face. At this time I noticed no dropping of saliva from his jaws. He had for several days refused food. Mr. F. told me that the dog had been bitten on the ear by another dog about four weeks previous to this time.

As the disease progressed, paralysis of the hind legs gradually developed. The dog walked with an awkward, wobbly gait. He tried to avoid notice, and lay a large part of the time far away from the door of his stall, moving only when aroused. He evinced no inclination at any time to snap, nor did he at any time show a dread of water. On the contrary, he would lap it, but was unable to swallow any. While little saliva was seen to drop from his jaws, his fore-legs were constantly wet with what dropped from his mouth as he lay with his head on his paws. The paralysis gradually increased until during Thursday he lay apparently helpless. On Thursday night, five days from the time he was brought to the laboratory, fearing that he would die during the night, and that on Friday I might be unable to give the time necessary for removing the medulla and inoculating rabbits, I chloroformed him and performed the post mortem that night.

Post mortem findings were the same as in the other dog, with the exception of the alimentary canal. This did not show the marked congestion seen in the other case. The stomach was empty, and showed a number of submucous hemorrhages. These were not recent, for the blood cells were destroyed and only the pigment remained. They may have had nothing to do with the rabies.



Rabic Tubercle.

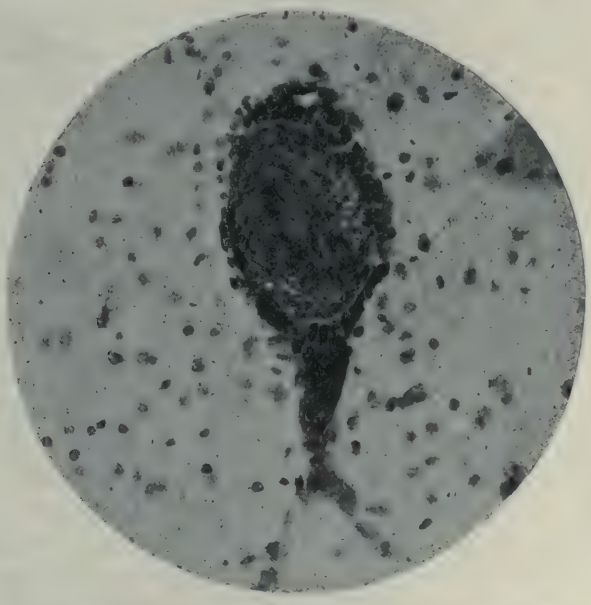
A series of five Belgian hares was inoculated with an emulsion of the medulla, with the following results:

All of these hares but one died, showing symptoms and post mortem changes found in rabies. The fifth hare was kept until necessity for the use of the box stall in which it was kept compelled us to kill it. The shortest incubation period in this series of inoculations was 16 days.

On Thursday, November 6, at the re-

quest of Health Officer Kiefer, I went with him to see a cow that had been killed, suffering from what was supposed to be rabies. I obtained the following history:

During July or August, the cow had a sore leg. Examination of the scar showed a wound resembling that which a dog might have given by a bite. Symptoms first appeared on the day before, although the cow had for several days refused her food. She was not in heat, nor was she far advanced in pregnancy. Wednesday she became irritable, and on the way home from pasture attacked her attendant several times, but as her horns had been removed, she was unable to do him harm. He thought nothing of it, except that she had been irritated by boys in her pasture. About 12 o'clock that night her owner was wakened by hearing her bellow. At 2 o'clock he was again wakened by more disturbance, and about 4, hearing a great commotion, ended by a crash, he called his barn man, and hurriedly dressing, went out to her stable. His man told him that he had been up with the cow for about an hour, and that she had just broken out of the barn. I saw the place later, and she had simply torn off the end of the shed where she was kept. When they went out to recapture her she met them in the alley, and as soon as she saw them she made for them. The barn man, stepping aside, caught her by the halter, and managed to hold her and keep her from harming him, although she was struggling violently all the time, until her owner came to the rescue with a rope, and together they tied her to a telegraph pole that stood within a foot or two of a barn on the opposite side of the alley. She immediately attacked the pole and the barn, finally throwing herself against the pole so violently that she knocked herself down. She was then killed to prevent her doing further damage.



Dilated Blood Vessel, with Collection of Leucocytes along its course.

Her head was brought to the laboratory, and a series of nine rabbits was inoculated with the medulla. Of these rabbits one died immediately after the inoculation; seven died showing all the symptoms of rabies; one suffered no ill effects

from the inoculation and was finally killed. The shortest incubation period in this series was fifteen days.

I have some hesitation in presenting this work, knowing that in many respects it is incomplete. I do so, hoping that however imperfect, it be of some interest.

In closing I wish to thank Mr. E. H. Hayward, without whose assistance these inoculations would have been impossible. In addition to other services, I am indebted to him for the microscopical work and for the photomicrographs that accompany this paper.

33 Mullett Street.

THE PHYSICIAN ON THE WITNESS STAND.*

By S. T. DOUGLAS.

A facetious barrister once remarked that prevaricators might be conveniently arranged in an ascending series, viz.: Ordinary fibbers, liars, and experts. This classification strikes one as exceedingly harsh, but for the cause of it one does not have to seek very far. It is based somewhat upon ignorance upon the part of the judiciary and the bar, but I believe more generally upon what might be called worse than ignorance on the side of the so-called expert witness. I have been asked to say something on the topic, "The Physician on the Witness Stand," but I trust I will not be considered as departing too far from the subject if I extend its scope to a consideration of the scientific expert witness, viewed from a professional standpoint.

The natural respect which the laity has for the physician gives him, as he enters the witness box, such character and strength as is possessed by but few others. And if he maintains the dignity of his profession by a plain and impartial statement of the truth, by a fair and frank expression of opinion, his testimony is sure to have great weight. He is the most usually met with expert. He should be ever mindful of the privilege which the law gives him in respect to the confidences of his patients—those confidences which are absolutely sacred, and the betrayal of which for mere gain would but ruin the reputation of the ablest of the profession. He should be open and frank in his statements, and remember that neither the court, lawyers, or the jury, can understand with much clearness the technical expressions of the profession, but prefer that the case at hand be represented in a simple and terse manner, freed as much as possible from scientific verbiage. Scarcely a day passes that the public press is not filled with the account of some trial, made notorious, and prejudiced, perhaps, largely by its publication, but made equally conspicuous by the character and testimony of the expert witnesses called to prove or disprove the guilt or innocence of the person on trial. It would seem as if any one having the slightest smattering of knowledge of the subject involved in the litigation and concerning which he is asked to testify, could boldly take the witness stand, proclaim himself an expert on the subject and forthwith declare his opinion —an opinion sometimes based upon no experience and no previous information whatever, but biased and controlled almost absolutely by either a reward already paid or by the hope of a future one.

The question of the standing of experts and expert testimony in courts of justice is one which is engaging the attention of lawyers, judges and litigants in this country and in England. Many a court has been forced, by the character of the experts coming before it, to express its disgust at this class of testimony, and it is not infrequent to hear of a

*Read before the Wayne County Medical society, Feb. 12, 1903.

charge being made to the jury that entirely ignores the opinion of the expert witness.

The field of the so-called expert has been largely increased. Some one is injured, and on both sides medical examinations are made, not necessarily for the purpose of improving the condition of the injured party, but more particularly to ascertain what his condition is, for the purpose of litigation. The expense attending such examinations is becoming, in many cases, enormous. The amount of damages recovered becomes an insignificant sum compared to the amount paid by the unfortunate litigant, who is compelled to defray the costs of these experts.

It is not entirely improbable that the present day professional medical expert is the outgrowth of the precedent of those vultures of the bar, who are easily first at the bedside of the injured person, urging that whatever the cause of the injury, whether by the injured person's own neglect or not, he has a cause of action which will bring heavy damages if entrusted to the solicitor. And it is equally probable that it is to a certain extent chargeable to the employment by large corporations in whose business there is a natural danger, of physicians, who, by such employment, become paid professional experts, and who are furnished with a "hurry-up wagon," and with instructions to beat, if possible, the damage case lawyer in his efforts to reach the bedside of the injured. Can a medical expert be any more free from bias in the expression of opinion in favor of his client than the vulture lawyer referred to?

Experts are found on both sides of most criminal cases, giving generally conflicting and always expensive testimony, and it would be almost useless to attempt to deny that the result of important trials in which expert testimony is a factor is to further discredit the expert, as well as to condemn the system—or lack of system, rather—under which they give their evidence. These battles of experts, who are employed for the purpose of not simply testifying about the facts within their personal knowledge, but to give their inferences from these facts, are most frequent. That these inferences should be conflicting and contradictory is no more to be wondered at than the fact that they are favorable to the side on which the respective experts are retained, and it is no more than natural that this should be so. Such a state of affairs is witnessed in almost every case in which expert testimony is called in, whether it be in regard to disputes on the alleged administration of poison, medical testimony generally, or the identification of certain remnants of bones, as in the famous Luetgert case in Chicago, which were claimed by one side to be those of a human being and on the other side, with equal strenuousness, to be those of a hog, or whether in the diagnosis and treatment of some disease, the inevitable positive contradictions of this class of witnesses are always found, and only go to discourage the administration of law and to defeat, in a measure, the ends of justice.

Whether the fragment of bone found in the vat, which was the pivotal point of the Luetgert case, were human or not, was an issue which in some other country would have been impartially passed upon by a permanent commission of experts, appointed by the government, called by the judge, paid by the year, and making their report independent of either side, and this commission would not have been interested in the case in one way or the other. Their report would have been scientific and impartial. When made, it would have been accepted by the jury and the court as giving the facts in the case. The trial would have been free from those sacrifices of conscience neces-

sarily made by the professional witness, and those exhibitions of contradictory scientific testimony which go so far to discredit the profession, as a whole, in the capacity of witnesses. Unfortunately, however, this is not our way of getting at such facts. We allot experts to each side, and it becomes a tug of war which can exercise the greatest pull on the minds and imaginations of the jurymen. Each side finds by sufficient payment men of science willing to impart their views. The medical experts are as much on opposite sides as the lawyers, and moreover, they are paid in the same way.

Someone has said that "Expert testimony should be the colorless light of science brought to bear upon any point where it is wanted; that it should be impartial and unprejudiced; that there should be no half-truths uttered; and that the suppression of the whole truth is in the nature of false testimony." If this standard were applied to any of the recent trials it would necessarily follow that one or the other class of witnesses lied most lamentably. Unfortunately, this definition is one of expert testimony, not as it is, but as it ought to be.

The scientific man, whether he be the physician, the chemist, or the mechanic, should at all times be ready to have his work scrutinized with all care. But the opinion entertained by the public in reference to expert testimony may be ascribed, perhaps, as a cause why men purely scientific, honest and fair in their opinions, unprejudiced by the hope of a larger reward, sometimes leave the witness stand after an examination by an attorney who knows probably absolutely nothing about the subject matter being testified to, leaving an impression upon the jury far from flattering to their skill and ability, and giving to their testimony no weight whatever.

The expert medical witness must be prepared to encounter in the court-room not only unfamiliarity with his specialty but also deep prejudice and popular notions so fixed as not to be removed by the word of a single witness. A well-posted witness (and no physician should ever go upon the witness stand unless he is well posted), able to control his temper on cross examination, has always an advantage over the examining attorney. He is thoroughly familiar with his subject while the attorney is more than likely groping in the dark, hoping to stumble upon some defect which may aid his case. The physician-witness needs only to believe this, and to be frank, simple and straightforward in his replies to questions and in expressing his opinion.

It is a fatal error for the expert witness to assume to know too much. Terse, clear answers, well within the narrow path looking to the point in question, are the only safe ones, and when the inquiry leads into regions where the witness himself is not truly an expert, or is in the slightest doubt, his proper course is to refuse to testify outside of the boundaries of his regular province. An admission of a lack of knowledge on a certain point is apt to strengthen a medical expert's testimony upon some other point with which he shows himself familiar; but an expression of opinion upon some question in which he has had so little experience as to forbid a valuable opinion, only weakens the value of the expert's testimony.

To insure clearness, it will be well for the medical expert to reduce technicalities to a minimum. Possibly to a degree they are unavoidable, but let them be as few as possible. Let your illustrations be homely but apt, and you will make the best impression on the court and jury. If possible, make them from scenes in the daily lives of the jurymen, for in this way the expert will be better understood. Do not think you are talking to a medical society. Ignore medical terms as much as possible.

The physician should never be led beyond the field in which he is truly an expert. As some one has said: "Be as fearless of legitimate ignorance as you are fearful of illegitimate knowledge." It is no more the province of a practicing physician, with an experience in one case, to give his opinion as an expert that the result of a chemical test to which certain portions of the body have been subjected, evidences the presence of morphine rather than the existence of ptomaines or leukomaines, than it is within the sphere of a chemist to diagnose a case of appendicitis.

That the science of medicine is not fully developed will account for much divergency in the testimony of medical experts. Do not believe that a guinea pig or a rabbit is a human being, for you may be led into the same predicament that certain medical experts were who, having made substantially the same experiments upon the innocent guinea pig, expressed diametrically opposite opinions, the one that the pig fattened and thrived by the use of formaldehyde in small quantities, and the other that he became pale, emaciated and sickly. These experiments may be a convenient indication, but do you believe they are the basis of a positive opinion?

When an opinion is speculative, theoretical, not based on actual knowledge and stating only the belief of the witness, while some other opinion is equally consistent with the facts of the case, such opinion is entitled to little weight. A physician who has never performed a certain operation, or met a certain set of complications, may speculate as to what he would do, but after all, of what value is his belief and opinion in contradicting the correctness of a course of action actually pursued?

Through ignorance so frequently encountered at the bar, the expert medical witness may be exposed to a one-sided criticism, and a weak point may be opened up by adverse counsel which a redirect examination may fail to repair, because of the want of familiarity with the technical subject on the part of the friendly attorney, and so the expert witness is left in the unenviable position of disagreeing with the general drift of his own testimony, while he is deprived of the means of insisting upon its revision and correction.

The true medical expert knows no side to a law-suit. His duty is not to give a lecture upon any particular subject, but to express his opinion truthfully and fearlessly, regardless of whom it helps or hurts.

Do not think you must always answer a question "Yes" or "No," although the attorney may waste much oratory in insisting upon such replies. If such an answer will not fully express an expert's opinion, he should insist upon refusing to answer, unless he can couple same with an explanation.

Above all things, the medical expert witness should not lose his temper. With this gone, his testimony is valueless.

It must be admitted that a serious feature of medical expert testimony is its unintelligibility. For instance, a question is asked of the witness in a reported medical case, whether a certain dose of a prescription containing chloral would have been dangerous, to which he replied: "Not unless the patient was idiosyncratic to chloral." Ten to one that not one of the jurymen ever heard of the word and possibly they might feel offended at its use. But this is mild compared with some of the medical and chemical terms often used, sometimes, it must be admitted, with a feeling on the part of the witness that their use indicates knowledge and profound study. The foreman of the jury in the famous Buchanan case in New York, remarked, after the trial was over, that "if the jury had taken in one-tenth

of the scientific testimony they ought to receive diplomas."

Another cause of the waning prestige of expert testimony may be said to be (and for this the lawyer is responsible), the excessive length to which such evidence is pushed. Murder trials, occupying three or four weeks, or longer, are not at all uncommon, with six to ten experts on each side. Possibly the only remedy for this is that in time counsel will, by reading and studying, so acquaint themselves with the subject as to detect and expose a false or fallacious statement, thus sifting down the number of experts, and giving the true expert nothing to fear, but a confidence that in this way his own reputation is increased.

The hypothetical question is, perhaps, a necessary evil. The words of the *New York Times*, in commenting upon the famous Buchanan case, in which it stigmatized the hypothetical question as a method that "always being based upon a series of possibilities, simply opens up a field of conjecture, in which experts can theorize to their hearts' content, while the lawyers wrangle, the court scolds and the jury yawn and wonder what it all means," possibly in a measure reflects the general opinion.

An author has expressed his opinion of expert testimony in these words: "These gentlemen are generally required to speak, not to facts but to opinions, and when this is the case we ought not to be surprised to see with what facility and to what an extent these views may be made to correspond with the wishes or the interests of the party who called them. They do not, indeed, wilfully misrepresent what they think, but their judgments become so warped by regarding the subject from one point of view that even when consciously deceived they are incapable of expressing an opinion; being serious partisans, their belief becomes synonymous with faith as defined by the apostle, and it too often is but the 'substance of things hoped for, and the evidence of things not seen'." This possibility represents the popular estimate of expert evidence. It ought *not* to be correct.

The medical expert is confined to matters really beyond the reach of the ordinary intelligence and the testimony of those who have made these things their especial study ought to carry the greatest weight to the minds of those who, like the average juryman, know nothing at all about the subject. The opinion of an architect on the construction of a building, of an engineer on the strength of a girder, of a physician as to the cause of death should naturally be the sole guide by which a jury may arrive at an intelligent opinion, and these opinions ought to be generally conclusive. That they are not is, I believe, simply due to the fact that they *are simply* expressions of opinion; nevertheless they are opinions pure and simple. No one is bound to accept an opinion, if he chooses to set up his own prejudice in opposition to the matured judgment of eminent scholars or scientists. Is it not, therefore, the inherent vice of every opinion that it can never be conclusive, and it is always for the jury to accept or disregard it? Yet in many cases it is the only evidence that can be given. In poison cases, proof of the cause of death must always rest upon the evidence of the experts who have examined and analyzed the body, and the jury are practically forced to accept their conclusions.

There should *never* be any difference of opinion on a purely chemical subject, capable of positive demonstration. Two physicians may disagree as to the administrative treatment of a certain disease, but how can competent chemists disagree as to whether there is or is not poison in a given mass? Judge Story says: "Great weight should be given to the opinion of

experts who agree on a given subject," but he also says that such a condition is one of the rarest phenomena of nature and should be classed with the seven wonders of the world.

Again, it is impossible to have any confidence in conclusions drawn from premises which experience shows may be offset by a new discovery. The recent medical opinions as to the use of formalin, if corroborated by continued and widespread experiments, may possibly tend to show that this substance, which some eminent scientists have testified is a dangerous poison in any quantity, may yet be a veritable blessing.

In medical evidence there may always be room, perhaps, for a difference in honest opinion, and the cause of it may be the rapid advancement in knowledge and the radical changes going on in the profession. Opinions which ten years ago might have been unassailable are now shown to be baseless, and things which were then undreamed of are now shown to be facts. From a layman's standpoint, the rapid advance in medical and surgical practice is such that unless the older practicing physician keeps pace with these changes, he will find himself at odds with the younger men, whose education has been along the lines of modern discovery. Until the true effect and relation of the numerous discoveries in medical science have been fully known, we must necessarily expect that in the administration of justice elements of uncertainty in expert testimony will be found. Unless we know positively that in the processes of digestion or fermentation nothing can possibly be produced that will give the same test as to chemical reaction as some of the well-known vegetable poisons, morphine for instance, the value of the chemical test for that poison is weakened. In a recent noted trial, a medical and chemical expert of whom this state might well feel proud, if I remember correctly, gave it as his opinion, based upon actual experience, that certain of the ptomaines and leukomaines produce reactions similar to those of the vegetable alkaloids, and that, therefore, it cannot be said with certainty what it was that produced the reaction. Here indeed is an element of uncertainty that will last until the differences in the effects of these substances and true tests for distinguishing them, are found. Would it be so remarkable if medical or chemical science should discover some ptomaine having exactly the same composition, the same number of atoms of carbon, hydrogen and nitrogen, as one of the vegetable poisons? And if so, would it be any more remarkable if this substance should give the same color reaction under the same chemical test? Who can say that this is an entire impossibility? For the composition of ptomaines is, comparatively, but recently known.

Is it an exaggeration to say that in the light of modern medical and chemical science, more than one man, more than one woman, has been convicted of murder in the criminal history of this country by the testimony of experts, based upon some medical opinion, upon some chemical reaction which more modern science has proved fallacious? The possibility certainly is distressing to contemplate, that some one for whose death another has suffered the death penalty may, by reason of a night lobster supper, have died from the effect of a ptomaine poison, and the one so convicted has innocently given up his life, a sacrifice to science, or rather, ignorance.

The present system for the conduct of expert testimony is, in my opinion, somewhat deplorable and can lead to but bad results. It is at best a necessary evil. In many parts of the country the expert is in disgrace. In many states the law recognizes the necessity of paying more than the ordinary witness fees to experts,

so that there is a pecuniary recognition of their value. An expert whose skill is not shaken by the trying ordeal of the hypothetical question comes high. In a recent murder trial in New York city the medical experts received from the county $7,250.00, and the fees given experts in any one of our larger cities in any noted trial would probably be more than twice the amount of the annual salary of permanent experts.

But, it will be asked, what is the remedy? In Scotland, the report of the medical man engaged on the case forms part of the case itself before the procurator. In England, such testimony is adduced at the trial. In France (I quote a recent writer on the subject): "The court may order an investigation and report by experts, whenever it deems it advisable. If the parties cannot agree upon the experts the court appoints them. These are selected from the list made up especially of experts. The report of the investigation contains a statement of its presiding officer and is presented to the referee or Judge Commissionaire. The parties are not allowed to appear before the experts, but they are represented by counsel especially secured for the matter of the investigation. The report is signed by three of the experts and if there be a dissent, the dissenting opinion and the reasons for it are set forth in the body of the report. The judges, however, are not bound by the report if it is opposed to their convictions."

In Germany, where expert testimony is desired, litigants may agree upon the experts and the court may appoint the persons so agreed upon and confine the parties to a given number. Sometimes the courts submits to the parties the names of a number of experts and allows each side the option of choosing a certain number of them and then appoints those remaining. A class of officially appointed experts on certain subjects exists, and in trials pertaining to these subjects, such experts have the preference of appointment, unless there exists some especial reason why they should not be appointed.

In Prussia, as I understand it, a physician and a surgeon are appointed in every district, and an appeal may be taken to the medical college of the province, if the experts disagree or the parties desire it. "There is also an appellate medical college for the whole kingdom."

In Australia, persons desiring the opinions of an expert on any matter concerning which scientific evidence is important, have a choice made from an official roll of experts, and the appointee making the examination gives his testimony before the jury.

Where experts are paid by the parties to a cause, it is only natural that an *ex parte* character should be impressed upon their evidence, and although a man's opinion, formed upon a particular statement of facts, should be certain and defined, experience shows that it is often so chameleon like, it is likely to take color from the side which has made the first overtures. Is it not probable that the testimony of a physician retained regularly by a corporation or an individual given in a certain case, will be prejudiced in favor of his client? You make that charge against the lawyer; is the doctor any less human than the attorney?

Any plan which eliminates expert testimony from the charge of prejudice and paid opinion will be an improvement, for thereby the great cause of justice would be benefited and the confidence of the public established.

Experts should be selected by the court without any interference of the litigating parties. They should have no interest whatever in the suit. They should be considered friends of the court and should be dignified accordingly. If there is difficulty in the parties selecting their own experts, the fact that one side insists upon a favored witness as the expert should be sufficient to put any Court on his guard in allowing such

witness to testify. When selected, experts, especially medical or chemical experts, should be paid by the county, without being allowed to receive fees from either the prosecution or the defense. They should be entirely disinterested, both as to the subject matter and as to the parties. In other words, they should be free to express their honest scientific opinions, regardless of friend or foe.

There is certainly a widespread feeling that legislation should be enacted to remedy what I believe is an existing evil. Several states have already taken action in this direction. If I am correctly informed, six of the medical societies of Chicago recently appointed a joint committee of eighteen reputable physicians to draft a bill for the Illinois State Legislature for passage, and it has received the sanction of the Medical State Society of Illinois. Dr. W. J. Herdman, in a paper read before the Association of Railway Claim Agents, speaks in detail of this bill. Generally, it provides that the judges be authorized to appoint in the month of January of each year persons authorized to act as medical experts and to give evidence on such questions as presented in hypothetical form, or in criminal cases that may come on in courts presided over by them. They shall hold their appointments for a year, and until their successors are appointed and qualified. They are entered on a list as expert witnesses, kept by the clerk of the court, and each receives a certificate of appointment as such. They shall be citizens and shall be known in the community wherein they reside for their professional competence and personal probity, and if physicians, they shall have been at least five years in regular and active practice. The trial judge presiding in the case when expert opinion is desired, may, at his discretion, summon them for duty to the number of three. They are paid for their service by the county in such sums as the judge shall fix. It is their duty to give opinion on the facts as presented in hypothetical form in the cases in which they are called. They shall be subject to cross-examination by both the prosecution and the defense, but such cross-examination must be entirely confined to the subject embraced in their opinions. In criminal cases, if the state's attorney deems it advisable, the court having jurisdiction, on a statement from him, may summon expert witnesses to serve.

Pennsylvania has also made efforts in this direction, but the method in that state, being an appointment on the petition of one of the parties, is certainly open to criticism. One provision of the Pennsylvania act, however, should be considered. It provides that "the acting experts shall not, under penalty of fine or imprisonment, give their opinion to the parties or to any persons before the trial. They must either be present at the trial or must read a copy of the testimony before giving their opinion. They are not to be called by or side with either party, but called during the trial at a time determined by the court." They are paid by the county.

In New York an attempt has also been made, but no positive legislation has been enacted.

Is not the time ripe for an association of the Wayne County Medical Society's standing, from whose ranks the larger number of experts in this community are furnished, to take the step in the direction of this reform? Every county in the state, as I understand it, has a county medical society, and it seems to me there should be no practical difficulty in the way of selecting in each county lists of competent medical experts, from which the presiding judge in each county may select those best fitted to testify in the particular case, and that the testimony should be limited to those so selected. I can conceive that numerous objections may be raised to such a plan, but worked out on proper lines, it would certainly save the state and tax-payers hundreds of dollars annually.

Why is it not within the province of your association to select a committee to prepare a model statute, and present it for passage at the present legislature? The first state which reforms this abuse by giving the judges in each county the power to appoint such experts, would be taking a long stride in the right direction. The slightest examination or thought concerning the present system is sufficient to condemn it in the severest terms, and warrants the assertion that, not only on the grounds of expense but also those of the miscarriage of justice, should some such change be made.

Let us hope that Michigan will not be the last state to adopt some such reform.

Detroit, Michigan.

New Buildings for Columbia University.—The *Medical News* makes the following report of improvements at Washington: Since the reconstruction of the old hospital and the addition thereto of the extensive new structure just completed, the institution is now provided with private rooms, newly and comfortably furnished, with all modern improvements, some of them with private bathrooms, arranged en suite, and with open fireplaces. Elevators, sun parlors, a roof garden, and the best arrangements for ventilation, heat, and for every home comfort and convenience have been provided. In the original building arrangements have been made for a maternity service, and in the new structure, besides the private rooms, wards for medical and surgical cases are now ready. Three operating rooms, fully equipped with modern asepic and antiseptic appliances, and rooms for a dispensary service, have also been supplied, including a complete sixteen-plate Bowen X-ray apparatus. The new building for the Medical and Dental Schools is five stories high, with four large lecture halls, each seating from 200 to 350 students; large laboratories for chemistry, pharmacy, histology, physiology, bacteriology, pathology, and anatomy; recitation rooms, professors' rooms, museum, library, reading room, and study rooms. The dental infirmary rooms, with good southern light, modern chairs, and every facility for operative and prosthetic work, are unexcelled. The central location of the hospital and the readiness with which it can be visited by members of the medical staff in case of need are especially desirable.

Dangers of Hypnotism.—We recently spoke of the evils of popular hypnotism and of the dangers arising from its use by the ignorant. Since then the warning has been emphasized by others, and now German scientists are extending it to the heretofore seriously entertained therapeutic applications. From Berlin comes the report that the commission of experts in mental diseases appointed by the ministry of education to investigate the healing value of hypnotism reports that it is essentially worthless. The commission was composed of Professor Mendel and Drs. Gock, Munter and Aschenborn, who were appointed during the faith healing excitement there a year ago. The report declares hypnotism cannot produce organic changes nor cure epilepsy nor hysteria, but it can be used helpfully in some instances by removing symptoms through suggestion. In Cleveland, O., a plea was recently made in the defense of a criminal later convicted of murder in the first degree, that he had been hypnotized, and thus incited to the crime. The court told the jury that this testimony could be "accepted for what it was worth," and a recommendation for mercy by the jury followed, resulting in a sentence of life imprisonment. The folly of this recommendation is evident. If hypnotic influence is powerful enough to compel the commission of a crime, it is plain that it destroys the accountability of the hypnotized tool. If so, there would be no justice in the plea for mercy and lessening the severity of the sentence. But in that case the punishment should be inflicted upon the hypnotizer, who in the Cleveland trial seems to have escaped free.—(*American Medicine.*)

DETROIT MEDICAL JOURNAL

A MONTHLY EPITOME OF
PRACTICE AND THERAPEUTICS

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A GULLIBLE PROFESSION.

Gold bricks as such are seldom sold directly to physicians, but under other names the medical profession buys many gilded oblongs. Only occasionally is the doctor a business man in the current use of the term and hence he falls a ready prey to the sharp promoter who is equally ready to dicker for his little savings or for his professional good-will. Mining and industrial schemes of all sorts are laid before him as "good things" or "ground floor" propositions; but time proves that he was the "good thing" when he strikes bed-rock on his "ground floor proposition." A surprisingly large number of apparently level-headed physicians invest in Tontine Companies and other gambles which are insolvent from the first day of business.

The second type of sharper works the profession along pharmaceutical lines for his own financial gain. Physicians are induced to introduce a product by prescribing it; and when a popular demand for the product is thus created, it is advertised direct to the laity, often backed by the endorsement of those who have been gulled into prescribing it. Another schemer donates stock, worthless but for the active co-operation of bribe-taking physicians. This scheme is hard to work, because most physicians are too ethical to sell their good-will at the low rate which the cupidity of the promoter allows him to offer as the doctor's share of the rake-off. The latest of these grafts as alluded to in a previous issue attempted to metamorphose the bribe into the dear forms of wife and babies, happily cared for by gratuitous insurance. This sugar-coated pill has evidently not been taken "without shaking" by a sufficient number, and the concern now appeals for support to the "physicians of America," on the ground that its method of business prohibits substitution, counter-prescribing, refilling and other objectionable practices of the unscrupulous druggist.

This company puts on the market a limited number of compounds which are mainly substitutes for well-known semi-proprietary products now before the profession, under new trade-names sufficiently changed to avoid copyright complications. The physician is given the formula, but the druggist is not; hence the physician who prescribes any of these compounds is forced to do so under the proprietary names—catchy enough in the main to become household words with the laity within a short time. The sequel is easy to see—another dozen or two of old combinations under new names sold direct to the laity. A beautiful scheme, certainly, for the promoter!

The physician is surely not benefitted by fostering wholesale self-prescribing among his patients, nor by abetting the practice of the druggist in selling over the counter in response to the popular demand products for which he is made to pay three or four times the current prices of the same preparations, minus the trade-mark name.

The company claims that a system of removable labels, to be redeemed at fifty cents a dozen when returned by the druggist, with his own name and that of the prescribing physician upon them, will

prevent the druggist from supplying the popular call for these products which will follow their general use by physicians under easily remembered names like "Golden Seal," "Bronchial Sedative" and "Cod Liver Oil."

It is presumable that the druggist is only human and would take his profit on the sale over the counter in preference to the four-cent label rebate, with a trustful hope at some time the label might be useful, too.

The advancement of modern pharmacy, coupled with the commercial spirit of the age, has placed many preparations of undoubted value and grateful palatability upon the market. Unfortunately, however, many of these products have come into general use among the laity through the careless use of trade-mark names by prescribing physicians.

Any company organized to foster the use of these grateful and palatable compounds under pharmaceutical and not *proprietary* names would be entitled to hearty support from the medical profession, because the indiscriminate drug-taking of the laity is an undoubted evil in itself, irrespective of its effect upon the financial returns of practitioners of medicine. But the company in question appears ill adapted to work reforms in this regard, and physicians should hesitate to aid it in popularizing its trade-mark among an already over-medicated public.

EXPERT TESTIMONY.

The interesting paper upon this subject published in this issue, expresses forcibly the current opinion among the best men in the legal profession regarding medical expert testimony. The scathing arraignment of the expert who is such in name only is doubtless merited. Much of the blame for this acknowledged abuse is rightly placed upon the vultures of the law and the corporations, which in self-defense from the aforesaid vultures maintain a corps of physicians whose judgment and testimony may be biased by the conditions under which they are employed. The present method of allowing an attorney to place upon the stand as experts any medical men whose opinions agree with his contention is certainly not conducive to elucidating "the truth, the whole truth and nothing but the truth." Here again the attorney is at least equally culpable with the doctor who testifies regarding matters of which he has little knowledge, but an elastic opinion. They both need the money.

The efficiency of the suggested remedy can be ascertained only by trial. When even the Supreme Courts are not wholly divorced from politics there is at least a possibility that a commission of experts selected by a local or a county judiciary might not represent fairly the best medical talent available. Instances may be recalled, even in this city, where experts have been selected by the courts who have been in no way recognized as such by the medical profession.

Even judges err in judgment, especially regarding the ability and standing of men outside their own profession. Why not defer to the judgment of a fair medical board, chosen from the leaders of the profession, themselves debarred from serving during their term of apointment, but empowered to select for the courts competent experts?

PAST AND FUTURE.

We close the second volume of the *Detroit Medical Journal* with every prospect of success. Our index, covering two years of the publication, shows that we have published ninety-four original articles, sixteen of them illustrated, and all written by men of high standing in the medical profession. The *Journal* has published 768 pages of reading matter, for the most part readable and interest-

ing, and it is our intention, beginning with the April number, to increase the size of the publication to some extent. Reviews of the leading articles of the month, brief but comprehensive, will be incorporated in the new make-up, and we shall endeavor to continue the *Journal* on the same ethical lines which have distinguished it since its first issue.

We have received gratifying support from the leaders, the thinkers, of the medical profession, and we confidently look for a continuance of their friendliness, inasmuch as we shall try sincerely to continue to merit it. The *Journal* is always grateful for honest criticism, and we are pleased to hear from any of our friends at any time with a suggestion that shall make the practitioners' monthly more of a help to all of us. We have tried to make the magazine practical, and we believe that we have succeeded.

Our advertisers have stood staunchly by a young periodical, always a test of friendship, and we are glad to be able to say that we have given good service in this direction, too. We shall continue the *Detroit Medical Journal* on the same broad lines as before, with every improvement for the benefit of our readers that our means will allow. We shall take up the first issue of Volume III with a good heart and work to maintain a standard which we confidently believe has been a high one.

EDITORIAL NOTES

The decision handed down by Justice Brewer of the supreme court, on the case of August G. Reitz, of Muskegon, who brought suit to test the validity of the medical act of 1899, passed by the Michigan legislature, has a refreshing distinctness. The decision absolutely establishes the right of the medical board of the state to act under the law in the premises, the words of Justice Brewer on this point being: "The power of the state to make regulations providing for determining the qualifications of those engaged in the practice of medicine, and punishing those who attempt to engage therein in defiance of such statutory provision is not open to question."[1] Further on, he says: "The proceedings of the board were not of a criminal nature; the state was seeking to ascertain who ought to be admitted to practice medicine and surgery, and criminality only arises when one assumes to practice without the right granted by the board. The proceedings to determine qualifications are no more criminal than an examination for the law, and if the provisions for the test are reasonable they must be complied with." The plea that the law is *ex post facto* received little credence by Justice Brewer, as he points out the fact that the statute does not attempt to punish for past offenses.

At the June meeting of the American Medical Association, held at Saratoga Springs, N. Y., a joint resolution from the section of Cutaneous Medicine and Surgery and the section of Hygiene and Sanitary Science was introduced, to the effect that steps be taken by the association looking toward the prevention of the spread of venereal disease. The house of delegates endorsed the resolution and drew up another, calling for a committee of six to be appointed by the president, "for the purpose of stimulating study in and uniform knowledge of the subject of prophylaxis of venereal disease." The resolution also called for a plan to be submitted by the committee to the association for a national conference on this important matter. The committee is as follows: Dr. Henry D. Holton, chairman,

Brattleboro, Vt.; Dr. Ludwig Weiss, secretary, 77 East 91st. St., New York; Dr. George M. Kober, 1600 T St., Washington, D. C.; Dr. W. H. Sanders, Montgomery, Ala.; Dr. L. Duncan Bulkley, 531 Madison Ave., New York, and Dr. Frank H. Montgomery, 100 State St., Chicago, Ill. The committee solicits personal correspondence from those who support the movement, and would be glad to hear from those who will contribute papers, etc., on the subject, in case the House of Delegates should view with favor the holding of such a congress as is pro posed.

On February 24 last a medical society composed of the physicians resident in Macomb county was organized at Mt. Clemens. It will be known as the Macomb County Medical Society, and starts with a charter membership of twenty-four. The society is the result of the recent determination of the physicians to organize the counties into societies, these to be affiliated with the state society and in turn with the American Medical Association. The officers elected for the county society are as follows: President, Dr. P. A. Knight, of Mt. Clemens; vice-president, Dr. R. L. Paskin, of Romeo; secretary and treasurer, Dr. Joseph Croman, of Mt. Clemens; committee on constitution and by-laws, Dr. William Greenshields, of Romeo, Dr. J. G. White, of Mt. Clemens, and Dr. G. Wilkie Shipman, of Richmond; committee on admission, Drs. H. F. Taylor and Henry G. Berry, of Mt. Clemens, and Dr. Edward Miller, of Romeo.

In line with the medical bill now pending in this state is the bill before the Pennsylvania legislature, which asks that everyone professing to diagnose and treat diseases in whatsoever way shall pass an examination by the state board, after four years of study in a recognized college. The evasive claim that one is not practicing medicine who does not give drugs or use the knife is thus eradicated. Special methods in therapeutics are thus not legally recognized; hence anyone may follow any system of practice desired, provided he is well trained in the fundamentals of medicine. Osteopathy, Christian Science and other short cuts to medical practice would then largely disappear, because there would be little inducement for the practitioner to limit himself to a system of narrow therapeutic application when a broad training had placed the whole world of medical science at his disposal. May the bill be enacted into law!

At the meeting of the regents of the university on the fifth of the month, the establishment of a Pasteur institute in connection with the university, was authorized. Michigan will thus have the honor of being the third state to contain such an institution, New York and Illinois being at present the only ones in which institutions for the preventive treatment of rabies are maintained. Dr. Victor C. Vaughan estimated that $3,500 would cover all the expenses of the department for a year, and that amount was accordingly appropriated by the regents. Dr. Thomas Cooley, a son of the late distinguished jurist, Thomas M. Cooley, will have charge of the institute. Equipment and building are already at hand, and it is believed that patients can be received by April 1.

In view of the fact that the *Index Medicus* is only now beginning to get on its literary feet again, a peculiarly timely action has been taken by the publishers of the *New York Medical Critic*. They have arranged to issue this month a medical index of the principal medical publications of this and other countries, to the number of over 600, and also the titles

and the authors of the articles published therein during 1902. The publication is expected to at least partially bridge over the period that has elapsed since the discontinuance of the *Index Medicus*. It will be presented to the subscribers of the *Critic*.

Ithaca has had a terrible lesson in the epidemic of typhoid fever which has held the city for several weeks. The drinking water of the city, which has about 12,000 inhabitants, was contaminated near its source by workmen sick with the fever, with the result that considerable over 500 cases of typhoid have already appeared. It seems a remarkable thing that there was no one in charge of the source of water supply to see that it was not rendered unfit for the use of several thousand people; the college students, numbering nearly 3,000, are packing up and leaving town, and college life is, if not at a standstill, pretty well demoralized. Ithaca will probably keep a sharper eye on her water supply hereafter; but the horse has already been stolen.

United States Consul McWade, at Canton, China, according to a dispatch of the Associated Press, makes the announcement that Dr. Adolph Razlag, an American physician, has discovered a means for the cure and extermination of leprosy. The consul's report to the state department says that the doctor's work has been extremely successful among the lepers in a village six miles away from Canton, and Dr. Razlag is advocating the adoption of his treatment in the Philippines and the Hawaiian Islands. The treatment is said in the dispatch to consist of "minute and prolonged sanitation and the use of highly antiseptic drugs."

They have been making things warm for one Nardenkoetter in Berlin. This man, an advertising specialist of an aggravated type, figured conspicuously in the German papers for years as an advertiser of nostrums. He dodged the law and the medical societies for years, became rich and spent money like water on advertising. He finally was brought to account, had a two weeks' trial, and received a sentence in contumacy to three years in jail and a fine of $900. He jumped his bail bond, however, and fled to England. His methods of treatment are said to have been very simple. He once had several patients waiting, but he was in a hurry and to save time he filled their prescription bottles with soapy water from a washbowl.

In a recent idle moment of waiting in the office of a successful practitioner of Detroit, we took occasion to glance over the books that he had on his office table, for the entertainment of his patients who were waiting their turn. It makes a fairly humorous list to publish them by titles and dates, as follows: Atlantic Monthly, January, 1901; The Critic, same date; Harper's Bazar, September, 1901; Scribner's, March, 1901; Tennyson's Poems; Detroit Blue Book; Pictorial History of Our War With Spain, 1898; Physicians and Surgeons of America, 1896; Japanese Fairy Tales. What a feast of literary excellence! And what happy hours one might while away with the Blue Book or the list of physicians and surgeons, seven years agone!

Bear in mind the fact that the American Medical Association holds its next meeting at New Orleans, on May, 5, 6, 7 and 8 of this year. Dr. Isidore Dyer, 124 Bayonne St., New Orleans, La., is the chairman of the committee on arrangements, and with his committee is hard at work preparing for a practical demonstration of true Southern hospitality toward those members of the association who attend this meeting. It will be a real

Southern meeting, and it is practically assured that there will be a large attendance of physicians from the South. The season is well chosen for such a meeting, and railroad rates of one fare for the round trip have been secured. It should be a large and an enthusiastic gathering of the profession.

At the annual meeting of the Detroit Free Dispensary for Women and Children, held March 4 last, the following officers were elected for a year: President, Dr. Adeline E. Gurd; secretary and treasurer, Dr. Anna Starring; directors, Dr. Lucy J. Utter, Dr. Margaret A. Fleming, Dr. Florence Huson and Dr. Harriet L. Hawkins. In the past year it was reported that 1,645 patients had been prescribed for and over 20,000 prescriptions compounded. The institution starts its eleventh year free from debt and with a small balance in its favor.

Capt. J. E. Mead, of the regular army, recently returned from the Philippines to Detroit, states that the worst feature of the islands is the cholera prevalent there. He estimates that several hundred thousand natives died of the disease in the past year. The American troops, he adds, have been able to stamp it out promptly whenever it has made its appearance among them.

Henry M. Utley, the librarian of the public library, called the attention of the library board at its last meeting to the fact that volumes exposed to infection by small-pox had been sent back with other books from one of the public schools. The board ordered all the books in the cases burned.

Through an oversight, an omission was made in connection with the article on "Otitis Media Insidiosa," by Dr. H. J. Hartz, published in the February issue of the *Journal*. The article was a paper which was read by Dr. Hartz before the American Rhinological, Otological and Laryngological Society, at Washington, D. C., in June, 1902. An interested discussion followed the reading of the paper.

A memorandum on consumption, sent to the reichstag at Berlin by the chancellor Van Buelow recently, showed that out of a thousand deaths in Germany of persons between 15 and 60, 316 die of consumption.

Drugged to Death.—The *Medical Standard* adds the following verses to an announcement taken from the *Chicago Tribune* to the effect that a new drug has been discovered, called "carbonylthiocarbimidophenylbenzylthiocarbamide:"

His pulse was high and his brow was hot;
He shook with chills and his eyes were red;
He hurried into the druggist's shop,
And gaspingly and painfully said:
"There's something wrong with my system, Doc,
I'm out of gear in a spot inside.
O, hurry now, and prepare a dose
Of carbonylthio—
carbimido—
phenyl—
benzyl—
thiocarbamide!"

The druggist hustled behind his case,
And ran his eye o'er the bottle rack,
From asafetida down to myrrh,
And opodeldoc and ipecac.
"It's here, I know," mused the druggist man,
As podophyllin and punk he spied.
"Now, where the deuce is that little box
Of carbonylthio—
carbimido—
phenyl—
benzyl—
thiocarbamide?"

The patient sank with a feeble sigh,
And called: "This bother I much regret.
If it's not there, you might substitute
An overdose of the alphabet."
The druggist asked for the name again;
The man essayed it, and then he died—
He choked on the thirteenth syllable
Of carbonylthio—
carbimido—
phenyl—
benzyl—
thiocarbamide!"

New Instruments & Devices

Mention of new instruments and devices in this department is entirely complimentary and articles illustrated are judged on their merits.

We invite manufacturers and physicians to send us matter suitable for publication under this head. A description of the device and an electrotype or half-tone with a base not greater than two and five-eighths inches should be sent.

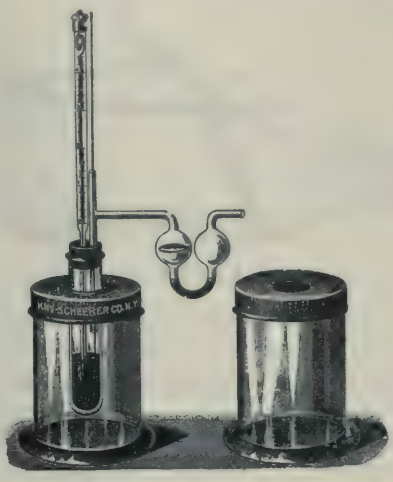
Always mention the price of the article in question.

The management cannot undertake to return cuts unless postage for same accompanies the letter with which they are sent.

BECKMAN-FRIEDANTHAL CRYOSCOPE.

This apparatus is designed for determining the freezing-point and for the investigation of blood, urine, gastric juice, etc. In using it the whole top of the apparatus is removed and the jar filled with a freezing-mixture of crushed ice and salt. The outer tube is then thrust through the cover into the freezing-mixture and the inner tube filled with from 15 to 20 cc. of the liquid to be investigated. The stopper, with the stirrer, etc., is now replaced and the whole placed in the tube which is already in the mixture of ice and salt. The liquid is stirred until the mercury begins to fall, and close watch must be kept, as the lowering of the mercury is rapid. The exact point at which the mercury again rises is ascertained and finally a point also at which it remains stationary. The reading of this point is taken, the freezing point of the mixture under examination.

It is necessary to first test the thermometer with distilled water; this is done by testing in the freezing-mixture and gently tapping the reserve loop of mercury at the top until there is enough mercury in the tube to make the freezing-point of the distilled water about 3.8°. The difference between the freezing-point of the water and that of the liquid examined is then easily determined. An able article on the manipulation of the apparatus is found in the "*Centralblatt fuer Physiologie*," 1899-1900, and articles by Drs. L. Casper, P. Richter and P. Mulon also treat of the same. The price of the apparatus illustrated is $25.00 complete.



LONDON AUTOMATIC HAMMERTOE SPRING.

Hammertoe has been found an obstinate complaint to treat, and often an operation has been found to be the only means of reducing the deformity. The existence of this condition in so many patients has led to the invention of a number of devices for its treatment, among the best of which are those illustrated herewith. Their nature and simplicity may be readily observed from glancing at the cuts. Figure I. shows the spring in position on the affected toe. It will be observed that the spring is securely held to the foot without undue tightening of bands or tapes, and that the device is in general a great improvement over the slotted plates which are commonly used in the reduction of hammertoe. No

fastening to the deformed member itself is required, and the pressure exerted on the joint is equalized, as shown in Figure

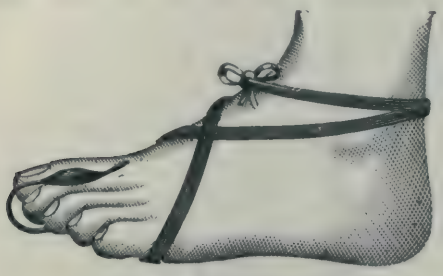


FIGURE I.

II., in such a manner as to do away with undue friction or annoyance to the patient. Free circulation is maintained while the spring is in position. This de-

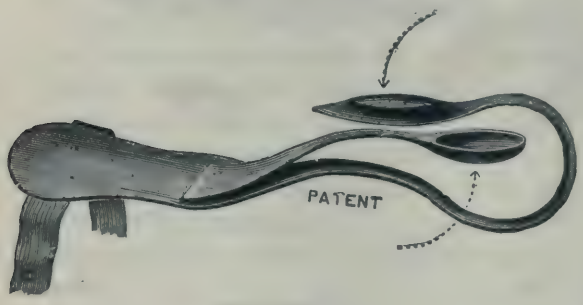


FIGURE II.

vice serves a useful purpose in being applied for after treatment, following an operation for the reduction of hammertoe. As the deformity is reduced the spring

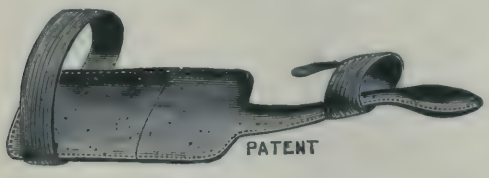


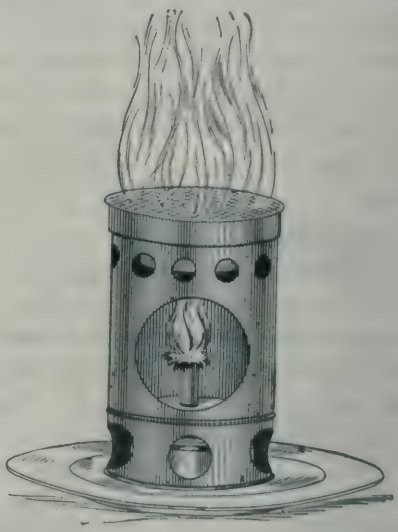
FIGURE III.

continues its action, requiring no readjustment.

The device shown in Figure III. is designed for use when the patient is walking, while that shown in Figure II. is worn while the patient is in bed. Springs of different strength are furnished by the manufacturers.

FORMALDEHYDE GENERATOR.

The cut published herewith illustrates a handy means for securing disinfection with formaldehyde gas. It is complete in spite of its small size, and is very handy to use; the gas is generated quickly and in large quantities. Pastilles of formaldehyde are placed in the receptacle provided for them, the wick of the generator



is lighted, and the work of disinfection begins. Physicians will find it a simple and a handy means of sterilizing their instruments, bandages, gauze, etc. The very simplicity and compactness of this form of generator makes it a general favorite, and it has successfully withstood every test thus far made of it. The pastilles come at $2.50 a pound, each containing 700 pastilles, and the generator itself is remarkably cheap, selling for $1.00.

Time Was Long In Passing.—A Buffalo surgeon reports a case of gastrotomy for the removal of a cheap brass watch, swallowed by the patient while joking. For a time previous to the operation patient was kept in hospital and given dry diet in the hope that the watch might be expelled *"per vias naturalis."* The doctor facetiously remarks that the man's stay in the hospital was a source of amusement to the other patients, who frequently asked him to "pass the time of day."—(*Clinique.*)

BOOK REVIEWS

The Practical Treatment of Stammering and Stuttering. By George Andrew Lewis. And a Treatise on The Cultivation of the Voice. By George B. Hynson, M. A. Illustrated. ages, 415. Price, Cloth, $3.50 net. George Andrew Lewis, Publisher, Detroit, Mich., 1902.

Defects of speech are the specialty of the author of the first portion of this book, Mr. George Andrew Lewis. Mr. Lewis may be said to be the scientific pioneer in treating impediments of speech, and he has devoted much time and attention to his work. His portion of the book treats of the cause, treatment and cure of these defects; what he writes is based on his own experience. He goes into the subject interestingly, and has brought together into a compact and convenient form practically all modern thought and experience along the line of treatment. He also furnishes the reader with some valuable exercises to be used in overcoming a tendency toward defective speech.

Mr. Hynson, on the other hand, takes up the subject of cultivating a voice after it has been freed from defects. He gives some vaulable hints as to what not to do, and in simple language he tells the reader some of the best things to do for the cultivation of a good voice. His explanations are intelligent and clear, and the reader of average intelligence should have little difficulty in following Mr. Hynson's train of thought. The book contains a number of carefully-selected pieces of literature, which have been chosen with a view to affording valuable material for exercising a voice, not only to assist in the work of ridding it of impediments, but to cultivate it as well.

Mr. Lewis' work as publisher reflects great credit on him. The book is of excellent material, well printed and well bound.

The 1903 Standard Medical Directory.

This publication met with a hearty reception at the hands of the profession in 1902 and the 1903 edition, now in preparation, will surpass that of last year. Active work is going steadily forward, with the co-operation of nearly 25,000 correspondents all over North America. The edition of this year will run to 1,300 pages, and will give a complete directory of physicians, societies, hospitals, sanitariums, publications, etc. The new features, which include an alphabetical index of physicians with postoffice addresses and roster of practitioners of the specialties, will, the publishers state, add about one-third to the volume of the work.

A Text-Book of Anatomy. Edited by Frederic Henry Gerrish, M. D., Professor of Anatomy in Bowdoin College. With Five American Collaborators. Second Edition. Price, Cloth, $6.50; Sheep, $7.50. Lea Bros. & Co., Publishers, Philadelphia and New York.

The popularity of this work is shown by the fact that two years sufficed to exhause the very large first edition. Its convenient size, systematic arrangement and numerous illustrations, many of them colored, make it an ideal text-book for both student and practitioner.

Proudfit Fellowship at Columbia.—A new fellowship in medicine of the annual value of $1,200, tenable for two years, called the Proudfit Fellowship, has been established at Columbia University for research work and advanced study in internal medicine.—(*Medical Review of Reviews.*)

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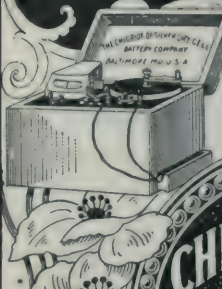

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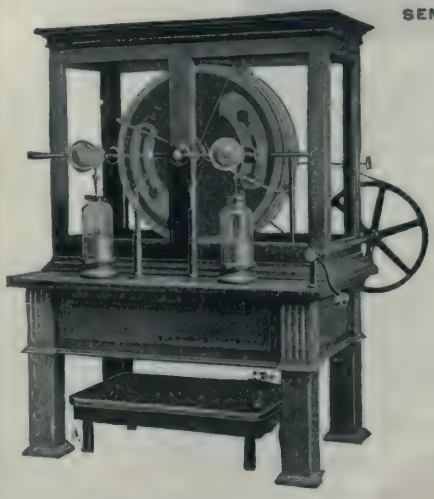

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THE OTHER BY MARKS

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Dear Sir: I wish you to know how many days the leg you made for me worked during the year 1899. You see that it exceeds more working days of ten hours each than there are working days in the year. If you know of anybody with an artificial leg who has turned out more days' work than I have firing a big coal engine, remembering that I have to walk two miles to work and two miles from work, making four miles every day in addition to my work, let me know who he is, that I may compare with him. During the month of January I worked 407 hours; February, 292; March, 358; April, 325; May, 280; June, 316; July, 337; August, 376; September, 337; October, 391; November, 375; December, 337. . . . If you will add up the number of hours you will find it amounts to 4131, or more than 410 days for the year, and you know there are only 313 working days in the year; so I have worked a year and ninety-six days in the year 1899, wearing your artificial leg every hour of that time, and it has not cost me one cent for repairs. It is as good now as it ever was. The engine that I am firing is one of those big ones that hauls coal from the mines to Pottsville—No. 148. In enclose a photograph of my engine, where you can see me at my post of duty. I get all over her with the same ease that I ever did. Sometimes I climb on top of the boiler while in motion. I can tell you more about what I am doing with my leg if you want it. The hard use I am giving your leg and the excelelnt wear it is giving prove it to be the best in the world.

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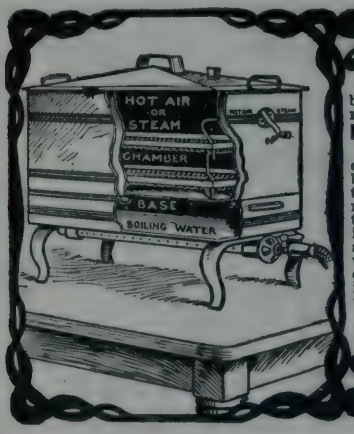

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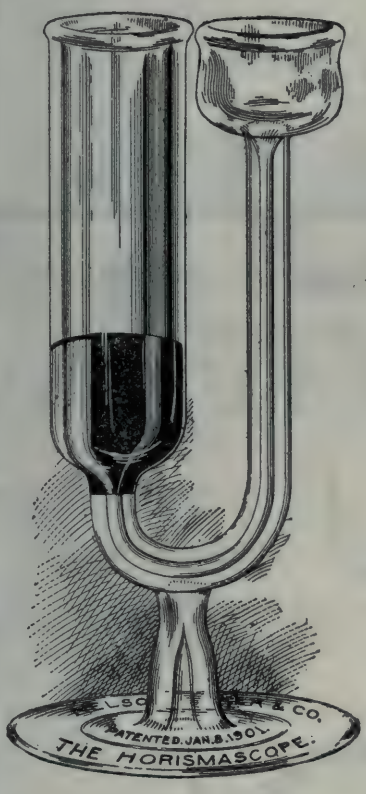

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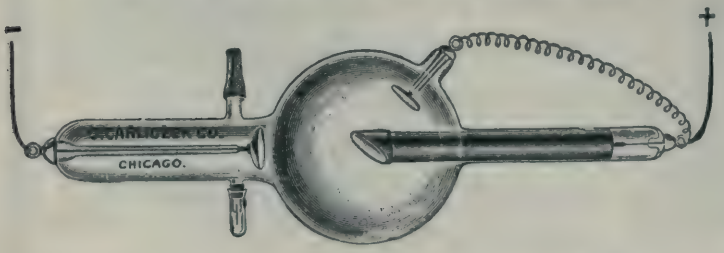

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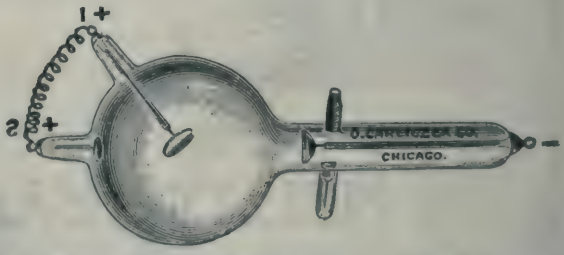

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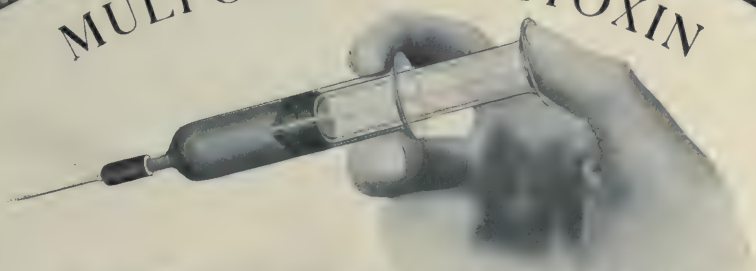

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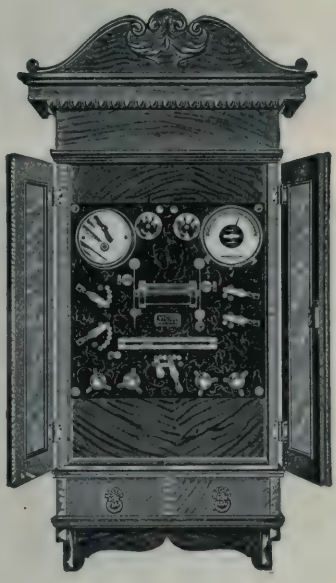

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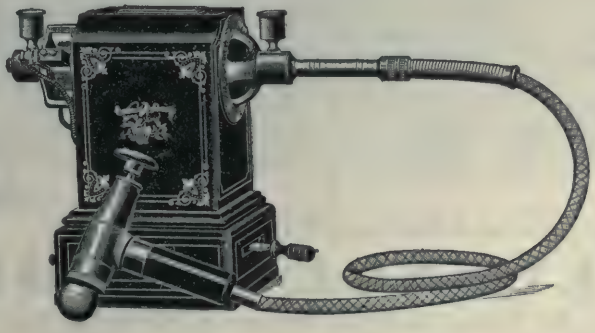

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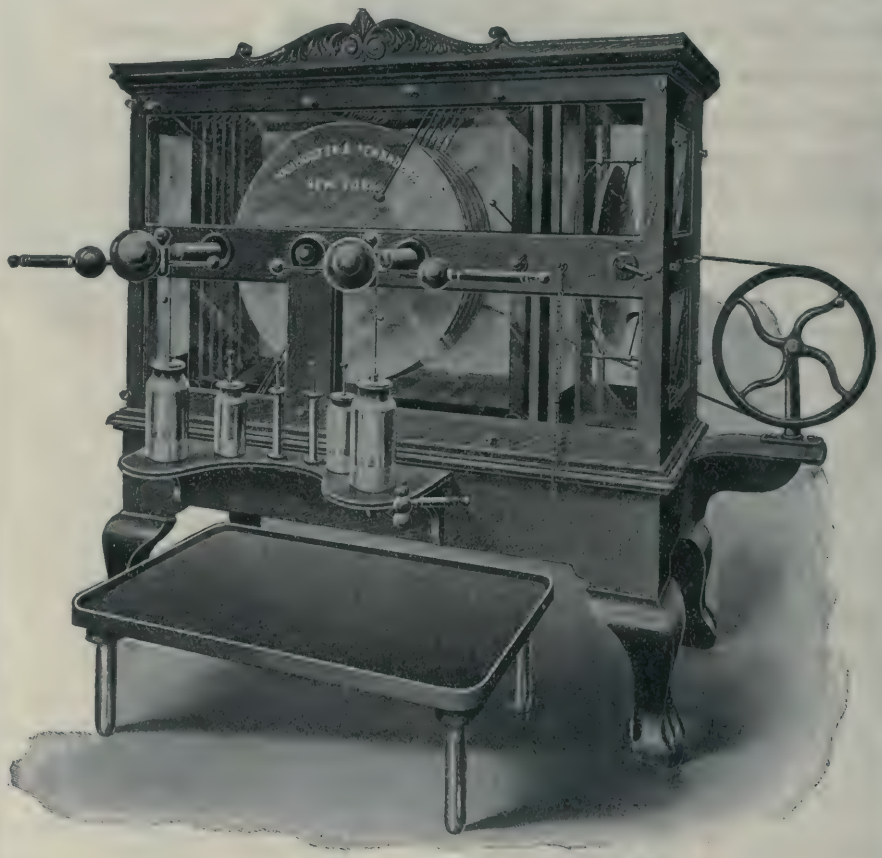

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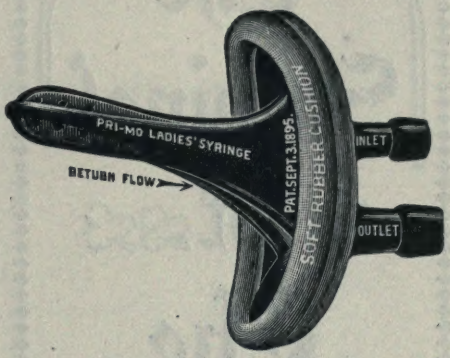

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